THE CLAIMS

What is claimed is:

1. A golf ball comprising a center and a cover disposed over the center, wherein at least one interpenetrating polymer network is present in at least a portion of the golf ball outside the center.

2. The golf ball of claim 1, wherein the golf ball further comprises at least one intermediate layer disposed between the cover and the center.

3. The golf ball of claim 1, wherein the golf ball comprises a cover material having at least one of a dimple coverage of greater than about 60 percent, a hardness of greater than about 15 Shore A, or a flexural modulus of greater than about 500 psi, and wherein the golf ball has at least one of a compression no greater than about 120 or a coefficient of restitution of greater than about 0.7.

4. A golf ball comprising a non-vulcanizable, non-aromatic, or non-ionomeric interpenetrating polymer network in a portion of the golf ball.

5. The golf ball of claim 4, wherein the interpenetrating polymer network is formed from a material comprising a urethane, an epoxy homopolymer or copolymer, a homopolymer or copolymer having backbone or pendant ester groups, a polyimide or copolymer including imide groups, a polysilane homopolymer or copolymer, a silicone homopolymer or copolymer, a polysiloxane homopolymer or copolymer, or a combination thereof.

6. The golf ball of claim 4, wherein the interpenetrating polymer network is formed from a material comprising an acrylate homopolymer or copolymer, an alkyl-acrylate homopolymer or copolymer, a homopolymer or copolymer including vinyl acetate groups, a homopolymer or copolymer including halogen groups, a homopolymer or copolymer including a uretdione group, or a combination thereof.

7. The golf ball of claim 4, wherein the interpenetrating polymer network is formed from a material comprising a homopolymer or copolymer including or made from a conjugated diene or a styrenic moiety.

8. A golf ball comprising a semi-IPN in a portion of the golf ball.

9. The golf ball of claim 8, wherein the portion of the golf ball comprises at least one of a center, an intermediate layer disposed about the center, or a cover layer.

10. A golf ball comprising an interpenetrating polymer network having at least two polymeric components, wherein the IPN exhibits a ΔT_g between any two of the polymeric components at least about 5% less than the ΔT_g between a polymer blend comprising the same two polymeric components.

11. The golf ball of claim 10, wherein the IPN exhibits a ΔT_g between any two of the polymeric components at least about 20% less than the ΔT_g between a polymer blend comprising the same at least two polymeric components.

12. The golf ball of claim 10, wherein the difference between the T_g of the IPN and the T_g of a pure polymer made of the same polymeric component present in the IPN in an amount of at least about 50% is at least 3°C greater than or less than the difference between the T_g of the same polymer in a polymer blend comprising the same at least two polymeric components in the same ratio(s) as in the IPN and the T_g of the pure polymer.

13. The golf ball of claim 10, wherein the difference between the T_g of the IPN and the T_g of a pure polymer made of the same polymeric component present in the IPN in an amount of at least about 50% is at least 10°C greater than or less than the difference between the T_g of the same polymer in a polymer blend comprising the same at least two polymeric components in the same ratio(s) as in the IPN and the T_g of the pure polymer.

14. A golf ball comprising an interpenetrating polymer network having at least two polymeric components, at least one of which is a crystallizable polymeric component that exhibits an area under a melting endotherm of at least about 2% less than the area under the melting endotherm of a homopolymer of the same crystallizable polymeric component.

15. The golf ball of claim 14, wherein the crystallizable polymeric component exhibits an area under a melting endotherm of at least about 10% less than the

area under the melting endotherm of the homopolymer of the same crystallizable polymeric component.

16. A golf ball comprising an interpenetrating polymer network having at least two polymeric components, wherein at least one of the polymeric components exhibits an average phase size at least about 10% less than the average phase size of that phase separated component in a blend or mixture of the at least two components.

17. The golf ball of claim 16, wherein the at least one polymeric component exhibits an average phase size at least about 20% less than the average phase size of that phase separated component in a blend or mixture of the at least two components.

18. The golf ball of claim 1, wherein the center comprises a solid sphere or a fluid-filled sphere.

19. The golf ball of claim 2, wherein the at least one intermediate layer comprises a tensioned elastomeric material.

20. The golf ball of claim 2, wherein at least one of the center, the cover, or the intermediate layer has a foamed structure.

21. The golf ball of claim 1, wherein the cover comprises at least an inner cover layer and an outer cover layer.

22. A golf ball comprising a cover layer which comprises an interpenetrating polymer network having at least two polymeric components, wherein the shear resistance rating of the cover layer is at least 1 rating category lower than that measured for a cover layer comprising a polymer blend or mixture that is substantially free of IPN and that is made of the same components as the IPN.

23. The golf ball of claim 22, wherein the shear resistance rating of the cover layer is at most 2.

24. A process for forming a portion of a golf ball which comprises:
providing a golf ball center; and
disposing an IPN about the center to provide a portion of the golf ball.

25. The process of claim 24, wherein the IPN is included in an intermediate layer disposed about the center.

26. The process of claim 24, wherein the IPN is included in a cover layer disposed about the center.

27. The process of claim 24, wherein the interpenetrating polymer network is formed from a material comprising a urethane, an epoxy homopolymer or copolymer, a homopolymer or copolymer having backbone or pendant ester groups, a polyimide or copolymer including imide groups, a polysilane homopolymer or copolymer, a silicone homopolymer or copolymer, a polysiloxane homopolymer or copolymer, or a combination thereof.

28. The process of claim 24, wherein the interpenetrating polymer network is formed from a material comprising an acrylate homopolymer or copolymer, an alkyl-acrylate homopolymer or copolymer, a homopolymer or copolymer including vinyl acetate groups, a homopolymer or copolymer including halogen groups, a homopolymer or copolymer including a uretdione group, or a combination thereof.

29. The process of claim 24, wherein the interpenetrating polymer network is formed from a material comprising a homopolymer or copolymer including or made from a conjugated diene or a styrenic moiety.

30. A process for forming a golf ball comprising:

providing a golf ball center;

providing a golf ball cover layer disposed over the center; and

optionally providing at least one intermediate layer disposed between the center and the cover layer,

wherein at least a portion of the golf ball comprises an interpenetrating polymer network that is non-vulcanizable, non-aromatic, or non-ionomeric.

31. The process of claim 30, wherein the interpenetrating polymer network is formed from a material comprising a urethane, an epoxy homopolymer or copolymer, a homopolymer or copolymer having backbone or pendant ester groups, a polyimide or copolymer including imide groups, a polysilane homopolymer or copolymer, a

silicone homopolymer or copolymer, a polysiloxane homopolymer or copolymer, or a combination thereof.

32. The process of claim 30, wherein the interpenetrating polymer network is formed from a material comprising an acrylate homopolymer or copolymer, an alkyl-acrylate homopolymer or copolymer, a homopolymer or copolymer including vinyl acetate groups, a homopolymer or copolymer including halogen groups, a homopolymer or copolymer including a uretdione group, or a combination thereof.

33. The process of claim 30, wherein the interpenetrating polymer network is formed from a material comprising a homopolymer or copolymer including or made from a conjugated diene or a styrenic moiety.

34. A method for preparing a portion of a golf ball, which comprises:

combining at least a first and a second component, each comprising a monomer, oligomer, prepolymer, or a combination thereof, to form a mixture, wherein the first and the second components are miscible with each other and are not substantially reactive with each other;

sufficiently polymerizing each component in the mixture to form a material comprising at least one crosslinked polymer; and

forming the material into the portion of the golf ball.

35. The method of claim 34, wherein the first component comprises a prepolymer.

36. The method of claim 34, wherein the material comprises at least two crosslinked polymers.

37. Golf equipment, at least a portion of which comprises at least one interpenetrating polymer network.

38. A method for preparing a portion of golf equipment, which comprises:

combining at least a first and a second component, each comprising a monomer, oligomer, prepolymer, or a combination thereof, to form a mixture, wherein the

first and the second components are miscible with each other and are not substantially reactive with each other;

sufficiently polymerizing each component in the mixture to form a material comprising at least one crosslinked polymer; and

forming the material into the portion of the golf equipment.